

What is claimed is:

1. A removable liner for a centrifuge container having an interior cavity and an opening, the liner comprising:
 - a flexible, semi-rigid body with an opening for introducing a sample, wherein
5 the body of the liner conforms to the interior cavity of the container, once inside the container.
2. The liner of claim 1, wherein said liner body is made of a material that is sufficiently resilient to allow a reversible deformation of the body.
3. The liner of claim 2, wherein said deformation of the body is in a form of folding,
10 twisting, collapsing, rolling, pleating, or any combination thereof.
4. The liner of claim 1, wherein said flexible liner body has a cling property.
5. The liner of claim 1, further comprising a strengthening structure for increasing the strength of said liner body, wherein
 - said liner body has a side wall, and
15 the strengthening structure is integrally formed on said side wall of the body.
6. The liner of claim 5, wherein said strengthening structure is a fold or a pleat.
7. The liner of claim 1 further comprising a peripheral sealing structure for providing a seal between the liner and the centrifuge container when assembled, wherein
 - said liner body has a side wall, and
20 the sealing structure is integrally formed with the body of the liner, and extends outwardly from the side wall of the liner body.
8. The liner of claim 7, wherein said sealing structure has an o-ring-like structure.
9. The liner of claim 1 further comprising a removable internal support structure for restraining the liner within the centrifuge container during centrifugation, wherein the
25 support structure is made of a rigid material.
10. The liner of claim 9, wherein a configuration of the internal support structure is selected from the group consisting of frames, curved self-supporting members, and multi-axis two-member assemblies.
11. The liner of claim 1 further comprising an elongated hollow member for introducing the
30 sample and removing trapped air, wherein
 - the liner opening has a continuous edge,

the elongated member is attached to or integrally formed with the edge of the liner body opening, and

the elongated member extends outwardly from the liner body.

12. The liner of claim 11, comprising a plurality of said elongated members.

5 13. The liner of claim 1, wherein said liner is disposable.

14. The liner of claim 1, wherein said liner is pre-sterilized.

15. A centrifuge container assembly, comprising:

a container, suitable for centrifuging, having an internal cavity and an opening for receiving a sample; and

10 a removable liner for a centrifuge container, having a flexible or semi-rigid body and an opening for introducing a sample, wherein the liner body conforms to the internal cavity of the container.

16. The centrifuge container assembly of claim 15, wherein said liner body is made of a material that is sufficiently resilient to allow reversible deformation of the liner body.

15 17. The centrifuge container assembly of claim 16, wherein said container has a narrow neck and the liner body is capable of deformation to fit through the neck of the container.

18. The centrifuge container assembly of claim 15, wherein said liner body has a cling property, and when inserted in the container, the liner clings to the internal cavity of the container and retains its position.

20 19. The centrifuge container assembly of claim 15, wherein the centrifuge container comprises a first member with a first cavity, a second member with a second cavity, and the first and the second members cooperate to form said interior cavity of the container for receiving the liner.

20. The centrifuge container assembly of claim 15, wherein
said container opening comprises a continuous edge,
the length of the liner body is larger than the depth of the internal cavity of the
container,
5 said liner body has a top portion, which is draped over the edge of the container
opening.
21. The centrifuge container assembly of claim 20 further comprising a container closure
with an internal surface, wherein
when assembled, the interior surface of the closure rests on the edge of the
10 container opening, forms a sample-tight seal, and immobilizes the draped top
portion of the liner body.
22. The centrifuge container assembly of claim 21 further comprising a plug for improving
said sample-tight seal between the closure and the container, wherein
the plug comprises a top portion and a bottom portion,
15 the bottom portion of the plug is inserted into the liner opening, and
the top portion of the plug rests on the edge of the container between the
closure and the liner.
23. The centrifuge container assembly of claim 20 further comprising retaining means for
retaining the liner in a fixed position within the container.
- 20 24. The centrifuge container assembly of claim 23, wherein the retaining means comprises a
tie wrap or a resilient member placed on top of the draped top portion of the liner.
25. The centrifuge container assembly of claim 23, wherein the retaining means comprises a
first mating element formed on the liner body and a second mating element formed on
the container, wherein the first and the second mating elements engage each other to
25 retain the liner in place.

26. The centrifuge container assembly of claim 25, wherein
said liner has a side wall,
said container has a side wall,
said first mating element is a peripheral sealing structure integrally formed with
the liner body and projecting outwardly from the liner side wall, and
said second mating element is a matching groove formed on the container side
wall.
27. The centrifuge container assembly of claim 25, wherein
the second mating element is a lip integrally formed along the container edge,
the lip projects outwardly from the edge of the container, and
the top portion of the liner is draped over the lip.
28. The centrifuge container assembly of claim 27, wherein the liner-contacting surface of
the lip is made of a gripping material with a high friction coefficient.
29. The centrifuge container assembly of claim 27 comprising a semi-rigid liner, wherein
said liner has a side wall,
said first mating element is a hook-like structure extending outwardly from the
liner opening and perpendicularly to the liner side wall, and
the hook-like structure has a shape conforming to the shape of the lip,
whereby when the liner is placed into the container, the hook-like structure
catches the lip.
30. The centrifuge container assembly of claim 23 further comprising a container closure
having an internal surface in contact with the container edge, wherein
the retaining means comprise a third mating element formed on the internal
surface of the closure and the second mating element formed on the edge of the
container opening, and
the second and the third mating elements have complementing structures.
31. The centrifuge container assembly of claim 15 further comprising an internal support
structure, which is placed into the liner and is capable of restraining the liner within the
centrifuge container during centrifugation.
32. The centrifuge container assembly of claim 31 further comprising a container closure,
wherein the internal support structure is integrally formed with the closure.

33. The centrifuge container assembly of claim 15 further comprising an adapter for, reducing the size of said internal cavity of the container, wherein
the adapter has a hollow,
the adapter conforms to the shape and tightly fits within the
5 internal cavity of the container, and
said liner fits inside the hollow of the adapter and conforms to its shape.

34. The centrifuge container assembly of claim 33, wherein the adapter comprises two members cooperating to form the hollow of the adapter for receiving and supporting the liner.

10 35. A method for separating solids from suspensions by centrifugation comprising the steps of:

- (a) providing a centrifuge container with an interior cavity and an opening;
- (b) providing a removable liner comprising a flexible or semi-rigid body with an opening for introducing a sample, and
- 15 (c) placing the liner into the container, wherein once placed inside the container the liner body conforms to the shape of the interior cavity of the container.

36. The method of claim 35, wherein the liner is made of a material sufficiently resilient to allow a reversible deformation of the body and the step of placing the liner comprises:
20 deforming the liner body to reduce its dimension; and
fitting the deformed liner through the container opening.

37. The method of claim 36, wherein the step of deforming of the liner body is carried out by folding, twisting, collapsing, rolling, pleating, or any combination thereof.

38. The method of claim 35, further comprising a step of filling the liner with the sample
25 before the step of placing the liner into the container.

39. The method of claim 38, wherein the centrifuge container comprises a first member with a first cavity and a second member with a second cavity, the first and the second members cooperate to form said interior cavity of the container for receiving the liner, and the step of placing the liner into the container comprises:
30 placing the liner filled with the sample into the first cavity;

placing the second member on top of the liner with the second cavity facing the liner; and

assembling two container members to enclose the liner.

40. The method of claim 39, further comprising a step of removing the liner from the container after centrifugation by separating the two members of the container.

41. The method of claim 35, wherein

said liner body comprises a top portion,

said container opening comprises a continuous edge,

the length of said liner body is larger than the depth of the internal cavity of the container, and

the step of placing the liner further comprises:

draping the top portion of the liner over the edge of the container opening.

42. The method of claim 41, further comprising a step of immobilizing the liner by using retaining means.

43. The method of claim 35, wherein said liner opening has a continuous edge and said liner further comprises:

an elongated hollow member for introducing the sample and removing trapped air, wherein

the elongated hollow member is attached to or integrally formed with the edge of the liner body opening,

the elongated member extends outwardly from the liner body, and

a juncture is formed between the liner body and the elongated member,

wherein the step of placing the liner comprises:

filling the liner with the sample through the elongated member;

sealing the juncture of the liner; and

positioning the liner into the container in a way that keeps the juncture sealed during centrifugation.

44. The method of claim 35, further comprising the steps of centrifuging the sample and harvesting the solids from the liner.

45. The method of claim 35, further comprising steps of centrifuging the sample and disposing of the liner.